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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Christophe Colignon

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12/23/2008

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EXAMINER

NGUYEN, TU MINH

ART UNIT

PAPER NUMBER

3748

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/595,635	<b>Applicant(s)</b> COLIGNON, CHRISTOPHE	
	<b>Examiner</b> TU M. NGUYEN	<b>Art Unit</b> 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 4,9-11,15 and 20-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-8,12-14 and 16-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20080423</u> .  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. An Applicant's Amendment filed on June 11, 2008 has been entered. Claims 1-4 have been amended; and claims 8-22 have been added. Overall, claims 1-22 are pending in this application.

2. Applicant's election without traverse of the species of paragraph 0049 (particulate filter) in an Applicant's Response to an Election/Restriction Requirement submitted on October 14, 2008 is acknowledged. Claims 1-3, 5-8, 12-14, and 16-19 are readable thereon and will be examined in their full merit. Claims 4, 9-11, 15, and 20-22 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

3. Applicant's argument that the rejections based on the reference of Kuboshima et al. in an Office Action mailed on October 4, 2007 is improper because the earliest effective date of Kuboshima et al. is later than the priority date claimed in the pending application, is persuasive; therefore, a new non-final rejection is set forth below.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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**5. Claims 1-3, 8, 12-14, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harndorf et al. (PCT Publication no. WO 02/38933) (see U.S. Patent 7,017,337 for the English equivalence) in view of Kawatani et al. (U.S. Patent 6,666,019).**

Re claims 1 and 12, as shown in Figures 1, 2a, 4a, and 4b, Harndorf et al. disclose a system and a method for assisting the regeneration of depollution means (115) associated with oxidation catalyst-forming means (catalytic converter on lines 62-64 of column 2), and integrated in an exhaust line (110) of a motor vehicle engine (100), and in which the engine is associated with a fuel metering system (180) for feeding fuel to the cylinders of the engine and adapted, at constant torque, to implement a strategy of regeneration by injecting fuel into the cylinders in at least one post-injection (see lines 24-30 of column 4), the system comprising:

- detector means (see lines 26-31 of column 5) for detecting a request for regeneration and thus for post-injection;

- detector means (load variable value as indicated on lines 9-11 of column 7) for detecting a stage during which the engine is at low load or idling;

- acquisition means (193) for acquiring the temperature downstream from the catalyst-forming means;

- determination means (step 230) for responding to the temperature to shorten a duration for application of post-injections by raising a threshold value for ending regeneration during a stage in which the engine is idling as a result of the low engine load (see lines 22-31 of column 6 that indicates a **shortened regeneration step** just to prevent total clogging of the depollution means when an operating of the engine is deemed to be unfavorable for regeneration); and

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- cutoff means (a “N” answer in step 230 that signals an unfavorable operating state of the engine) for immediately cutting off the post-injection as soon as the duration of post-injection use has reached the predetermined maximum duration of application during the stage in which the engine is returning to idling as a result of the low engine load, so as to limit a quantity of fuel that are post-injected when temperature levels in the exhaust gas line are unfavorably low during this stage of idling.

Harndorf et al., however, fail to disclose that the engine is a diesel type engine; that instead of raising a threshold value for ending regeneration, the system determines a maximum duration for application of post-injection; and that instead of immediately cutting off the post-injection, the system employs a reducing means for progressively reducing the or each post-injection as soon as the duration of post-injection utilization has reached the predetermined maximum duration of application.

Harndorf et al. disclose the claimed invention except for applying the invention to a diesel engine. It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the invention of Harndorf et al. to a diesel engine in which the engine is associated with common rail means for feeding fuel to the cylinders of the engine, since the recitation of such amounts to an intended use statement. Note that both “diesel engine” and “spark-ignition engine” generate exhaust gases containing harmful emissions of HC, NO<sub>x</sub>, soot, CO, etc, that require purification before the gases can be released to the atmosphere; and the mere selection of the system and method of Harndorf et al. for use in a diesel engine would be well within the level of ordinary skill in the art.

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Harndorf et al. disclose the claimed invention except for determining a maximum duration for application of post-injection in order to end a regeneration of the depollution means. It would have been obvious to one having ordinary skill in the art at the time the invention was made to end the regeneration by specifying a maximum duration for the application of post injection in Harndorf et al., since the recitation of such amounts to an intended use statement. Note that there are several known methods to end the regeneration of a depollution means; and the mere selection of the method that specifies a maximum duration for the application of post-injection in the system and method of Harndorf et al. would be well within the level of ordinary skill in the art.

As shown in Figure 1, Kawatani et al. disclose an exhaust emission control system for an internal combustion engine. As depicted in Figures 3-4, Kawatani et al. teach that when switching into a special operating state to regenerate a particulate filter (2), it is conventional in the art to gradually or progressively increase a quantity of fuel in a post-injection which is to be burnt, while at the same time progressively reduce a quantity in a main injection by a corresponding amount in subsequent cycles, until an intended post-injection quantity is reached in order to inhibit deterioration of the drivability due to a rapid change in torque during the switch (see the Abstract). Furthermore, it is also obvious that Kawatani et al. teach a step of progressively decrease a quantity of the post-injection fuel, while at the same time progressively increase a quantity in a main injection fuel by a corresponding amount when the engine is returned from a regeneration step to a normal step in order to inhibit deterioration of the drivability due to a rapid change in torque during the switch. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the

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teaching by Kawatani et al. to progressively decrease a post-injection in the system and method of Harndorf et al., since the use thereof would have been routinely utilized by those with ordinary skill in the art to maintain good vehicle drivability during a switch of engine operation.

Re claims 2 and 13, in the modified system and method of Harndorf et al., the reduction means are adapted to reduce the or each post-injection in application of a calibratable slope (see Kawatani et al.).

Re claims 3, 8, 14, and 19, in the modified system and method of Harndorf et al., the depollution means (115) comprises a particle filter (line 64 of column 2).

**6. Claims 5-6 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harndorf et al. in view of Kawatani et al. as applied to claims 1 and 12, respectively, above, and further in view of Rao (U.S. Patent 4,655,037).**

Re claims 5 and 16, the modified system and method of Harndorf et al. discloses the invention as cited above, however, fails to disclose that the fuel includes an additive for becoming deposited together with the particles with which it is mixed on the depollution means in order to facilitate regeneration thereof.

Rao discloses a carbon ignition temperature depressing agent and a method of regenerating a particle filter utilizing the agent. As indicated on lines 30-42 of column 3 and line 58 of column 3 to line 14 of column 4, Rao teaches that it is conventional in the art to include an additive (metal oxide) in an engine fuel so that the additive is deposited together with the particles with which the additive is mixed on a particle filter in order to facilitate regeneration thereof by reducing an ignition temperature of the particles. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the

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additive taught by Rao in the modified system and method of Harndorf et al., since the use thereof would have been routinely practiced by those with ordinary skill in the art to save fuel or electricity by reducing an ignition temperature of the particles.

Re claims 6 and 17, in the modified system and method of Harndorf et al., as taught by Rao, the fuel includes a NO<sub>x</sub> trap forming additive (metal oxide).

**7. Claims 7 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harndorf et al. in view of Kawatani et al. as applied to claims 1 and 12, respectively, above, and further in view of official notice.**

The modified system and method of Harndorf et al. discloses the invention as cited above, however, fails to disclose that the engine is associated with a turbocharger.

It is well known to those with ordinary skill in the art that a typical diesel engine such as the one in Harndorf et al. includes a turbocharger to increase an intake air pressure for high compression work in a cylinder in order to increase an engine performance output. Therefore, such disclosure by Harndorf et al. is notoriously well known in the art so as to be proper for official notice.

### ***Response to Arguments***

8. Applicant's arguments with respect to the references applied in the previous Office Action have been fully considered but they are moot in view of the new ground(s) or rejection.

### ***Prior Art***

9. The IDS (PTO-1449) filed on April 23, 2008 has been considered. An initialized copy is attached hereto.



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*Communication*

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Tu M. Nguyen/

TMN

Tu M. Nguyen

December 19, 2008

Primary Examiner

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